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Press Kit

Project Telesat-D
(ANIK-B)

RELEASE NO: 78-184

Contents

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NASA TO LAUNCH CANADIAN SATELLITE

Canada's most advanced domestic communications satellite, ANIK-B, is scheduled for launch by NASA from Cape Canaveral, Fla., on Friday, Dec. 15. The launch window that day extends from 7:21 to 8:59 p.m. EST.

The United States will be reimbursed $19.2 million by Canada for the Delta launch vehicle and launch services.

ANIK-B is the fourth domestic communications satellite to be launched by NASA for Telesat Canada which owns and operates the satellites as the country's Domestic Communications Satellite System. ANIK is the Eskimo word for "brother."

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This is a second generation satellite in a series often called Telesat and ANIK-B is referred to as Telesat-D by NASA. It was preceded by ANIK-A1 (Telesat-A), launched Nov. 9, 1972; ANIK-A2 (Telesat-B), launched April 20, 1973; and ANIK-A3 (Telesat-C), launched May 7, 1975.

The new satellite is to replace ANIK-A1 now positioned at 109 degrees west longitude over the equator, due south of California. With a design lifetime of seven years, the ANIK-B will provide point-to-point voice, TV and data communications traffic to Canada's 10 provinces.

In addition to 12 commercial channels in the 6 and 4 gigaHertz frequency bands, ANIK-B has four channels for operation at the 12 and 14 GHz frequencies.

The entire capacity of the satellite's higher frequency bands will be leased to Canada's Department of Communications for two years with an option for two additional years' use. These channels will be used for a series of 14 pilot projects which stem from the Communications Technology Satellite (CTS), a joint U.S.-Canadian experimental satellite.

Included in these projects are social experiments such as telemedicine, tele-education, teleconferencing and Eskimo broadcasting, all intended to further evaluate the use of satellites for reaching remote locations equipped with small ground stations.

Other, purely technical projects are designed to produce experimental information about such subjects as signal propagation as well as power generation and usage.

The Delta launch vehicle will place ANIK-B into a highly elliptical orbit ranging in altitude from 185 to 35,787 kilometers (115 to 22,254 miles). The satellite will weigh 922 kilograms (1,956 pounds) at liftoff, including an attached solid fuel rocket motor.

Several days after launch, at the seventh apogee (high point) of the elliptical orbit, the attached solid fuel rocket motor will be ignited to circularize the ANIK-B orbit at the geosynchronous altitude of 35,787 km (22,254 mi.).

At this geosynchronous orbit altitude, the velocity of the satellite matches the rotational speed of the Earth and ANIK-B remains over the same location on the equator. Small gas jets will keep the satellite on "station" and properly oriented towards the Earth to receive and retransmit signals.

Its weight in orbit will be 474 kg (1,045 lb.).

About 25 minutes after liftoff, control of the ANIK-B mission will be transferred to Telesat's Satellite Control Center, headquartered in Ottawa, after separation from the Delta vehicle.

Tracking, transmission and reception of data will be provided by the Telesat Earth station near Allan Park, Ontario, about 130 km (80 mi.) west of Toronto.

The Delta is managed by the Goddard Space Flight Center, Greenbelt, Md., for NASA's Office of Space Transportation Systems. NASA's Kennedy Space Center, Fla., is responsible for launch operations management. Prime contractor for Delta and launch operations is McDonnell Douglas Astronautics Co., Huntington Beach, Calif.

The ANIK-B was developed and built for Telesat Canada Ltd., Ottawa, Ontario, Canada, by RCA Astro-Electronics, Princeton, N.J.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

MAJOR DELTA FLIGHT EVENTS

Event	Time	Altitude kilometers/miles		Velocity Km/Hr	Mph
Liftoff	0 sec.	0	0	0	0
Five solid motors burn out	57.2 sec.	10	6.2	2,740	1,702
Jettison 3 solid motor casings; ignite 4 solid motors	1 min. 4 sec.	12.4	7.7	2,738	1,701
Jettison 2 solid motor casings	1 min. 5 sec.	12.8	7.9	2,776	1,725
Four solid motors burn out	2 min. 1 sec.	42.7	26.5	8,382	5,208
Jettison 4 solid motor casings	2 min. 7 sec.	46.7	29.0	8,691	5,400
Main engine cutoff (MECO)	3 min.45 sec.	112.5	69.9	21,059	13,086
Stage II ignition	3 min.58 sec.	121.4	75.4	21,022	13,062
Jettison fairing (nose cover)	4 min.17 sec.	133.0	82.6	21,333	13,255
First cutoff - Stage II(SECO-1)	8 min.17 sec.	188.9	117.4	28,069	17,441
Restart Stage II	20 min.35 sec.	185.3	115.1	28,076	17,446
Final cutoff - Stage II(SECO-2)	21 min.18 sec.	184.2	114.5	29,814	18,525
Fire spin rocket	22 min. 7 sec.	183.7	114.2	29,815	18,526
Stage II/III separation	22 min. 9 sec.	183.8	114.3	29,815	18,526
Stage III ignition	22 min.51 sec.	185.8	115.4	29,807	18,521
Stage III burnout	23 min.35 sec.	192.9	119.9	36,892	22,924
Stage III/ANIK-B separation	24 min.44 sec.	231.5	143.9	36,767	22,846
Transfer Orbit(First apogee)	5 hrs. 38 min.	35,786	22,237	5,745	3,570

LAUNCH OPERATIONS

The ANIK-B spacecraft will be launched from Complex 17 A, Cape Canaveral Air Force Station, Cape Canaveral, Fla., by a three-stage 3914 Delta launch vehicle.

First Stage

The first stage is a McDonnell Douglas extended long-tank Thor booster with nine Castor IV strap-on Thiokol solid-fuel rocket motors. The Thor is powered by a Rocketdyne RS-27 engine using liquid oxygen (LOX) and RP-1 kerosene. The main engine is gimbal-mounted to provide pitch and yaw control from liftoff to main engine cutoff (MECO). Roll control is provided by Rocketdyne liquid fueled vernier engines.

Second Stage

The second stage is powered by a TRW TR-201 liquid-fuel, pressure-fed engine also gimbal-mounted to provide pitch and yaw control through second-stage burn. A nitrogen gas system uses eight fixed nozzles for roll control during powered and coast flight, as well as pitch and yaw control during coast and after second-stage cutoff. Two fixed nozzles, fed by the propellant-tank, helium-pressurization system, provide retro-thrust after third stage separation.

Third Stage

The third stage is the TE-364-4 spin-stabilized, solid-propellant Thiokol motor. It is secured in a spintable mounted on the second stage. The firing of eight solid-propellant rockets fixed to the spintable accomplishes spin-up of the third stage spacecraft assembly.

DELTA FACTS AND FIGURES

Height: 35.4 m (116 ft.) including fairing

Diameter: 2.4 m (8 ft.) without attached solids

Liftoff Weight: 190,972 kg (421,021 lb.)

Liftoff Thrust: 2,062,671 newtons (463,709 lb.) includes main engine plus five Castor IV strap-on solids

First Stage

Liquid portion consists of an extended long-tank Thor, produced by McDonnell Douglas. The RS-27 engines are produced by the Rocketdyne Division of Rockwell International.

Height: 21.3 m (70 ft.)

Diameter: 2.4 m (8 ft.)

Propellants: RP-1 kerosene fuel and liquid oxygen (LOX) oxidizer

Initial Thrust: 911,800 N (205,000 lb.)

Strap-on solids consist of nine solid-propellant Castor IV rockets produced by the Thiokol Chemical Corp., with the following features:

Height: 11.3 m (37 ft.)

Diameter: 1 m (3.3 ft.)

Average Thrust: 407,000 N (91,520 lb.) per solid

Second Stage

Produced by McDonnell Douglas Astronautics Co., using a TRW TR-201 rocket engine; major contractors for the vehicle inertial guidance system located on the second stage are Hamilton Standard, Teledyne and Delco.

Height: 7 m (23 ft.)

Diameter: 1.4 m (4.6 ft.)

Propellants: Liquid, consisting of Aerozine 50 fuel and Nitrogen Tetroxide (N_2O_4) oxidizer

Thrust Average: 43,398 N (9,756 lb.)

Third Stage

The TE-364-4 solid propellant motor is produced by the Thiokol Chemical Corp.

Height: 1.8 m (6 ft.)

Diameter: 0.95 m (3.1 ft.)

Thrust: 66,656 N (14,985 lb.)

NASA/TELESAT LAUNCH TEAM

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Joseph B. Mahon	Director of Expendable Launch Vehicles
Peter T. Eaton	Manager, Delta Program

Goddard Space Flight Center

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Robert E. Smylie	Deputy Director
Robert N. Lindley	Director of Projects
Robert Baumann	Associate Director Space Transportation Systems
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William R. Russell	Deputy Delta Project Manager, Technical
Robert Goss	Manager, Delta Mission Analysis and Integration
Philip Frustace	Delta Mission Integration Manager
William Hawkins	Mission Operations and Network Support Manager
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Kennedy Space Center

Lee R. Scherer	Director
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Kennedy Center (cont'd.)

Dr. Walter J. Kapryan	Director of Space Vehicles Operations
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W. C. Thacker	Chief, Delta Operations Division
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David A. Golden	President
William Zatychec	Director, Satellite Systems Division
John Korda	Spacecraft Manager ANIK-B Program
John Huva	Range Coordinator ANIK-B
David Griffiths	Launch Systems Supervisor

MAJOR CONTRACTORS

RCA Astro-Electronics Division Princeton, N.J.	Spacecraft
McDonnell Douglas Astronautics Co. Huntington Beach, Calif.	Delta launch vehicle

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